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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,357	06/26/2001	Anthony J. Dickman	NPW 315	1670

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EXAMINER

DOVE, TRACY MAE

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 06/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,357

Applicant(s)

DICKMAN ET AL.

Examiner

Tracy Dove

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/30/01.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: IDS 12/23/02

DETAILED ACTION

Information Disclosure Statement

The information disclosure statements (IDSs) submitted on 7/30/01 and 12/23/02 have been considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-15, 25-31 and 33-66 are rejected under 35 U.S.C. 102(e) as being anticipated by Edlund et al., US 6,375,906.

Edlund teaches a fuel processing system assembly adapted to produce hydrogen gas from a carbon-containing feedstock. The fuel processing assembly includes a fuel processor, such as a steam reformer. The fuel process assembly further includes a feed assembly adapted to deliver a carbon-containing feedstock, such as a hydrocarbon, to the fuel processor (abstract). Edlund discloses various mechanisms for controlling the ratio of steam to carbon-containing feedstock (1:48-50). The carbon-containing feedstock stream is mixed with water in a reservoir 48 and a water(steam)/carbon-containing feed stream mixture exits the reservoir and is delivered to the fuel processor (5:11-15). The fuel processing system includes a sensor adapted to measure the saturation pressure of the water in the reservoir. The sensor may be inside the reservoir (4:58-64). Figure 4 shows a fuel processing system including a water delivery system, a carbon-

Art Unit: 1745

containing feedstock delivery system, a reservoir and a fuel processor. A sensor is connected to the dome of the delivery regulator and may raise the delivery pressure above the reference pressure by a determined amount. The proportion of steam in the mixture is determined by the ratio of the water saturation vapor pressure to the delivery pressure (4:5-7). Control system 90 controls the ratio of carbon-containing feedstock to water in the feed stream to the fuel processor, such as in response to user-inputs or stored values establishing a desired ratio or acceptable range of ratios. In response to temperature measured by a sensor, the controller may actuate a regulator to adjust the delivery pressure of a carbon-containing stream in response to a temperature change. Similarly, the controller may regulate the ratio by controlling a heat assembly and/or a water delivery system to control the temperature of water in the reservoir (7:19-32). The molar ratio of water to carbon in the feed stream is in the range of about 2:1 to about 5:1 (4:17-27). A flow meter can be used to measure the flow rate of the carbon-containing feedstock entering the feed assembly (4:41-43) (external sensor). To maintain the desired level of water in the reservoir, the water delivery system includes a sensor adapted to measure the level (or volume) of water in the reservoir (5:40-60). The reservoir comprises a vent 80. The feed stream leaving the reservoir may be received by a separator region prior to being sent to the fuel processor (3:1-8). The fuel processing system further includes a fuel cell stack that produces an electric current. The electric current is used to meet the electric load applied by one or more associated devices (2:32-46).

Thus the claims are anticipated.

Claim Rejections - 35 USC § 103

Art Unit: 1745

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edlund et al., US 6,375,906 in view of the instant specification (pages 17-18).

See discussion of Edlund above regarding claims 1-15, 25-31 and 33-66.

Regarding claims 16-20, Edlund does not explicitly state the sensor is a refractive index sensor, a densitometer, a viscometer, a spectrophotometer or an electrical conductivity sensor.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because Edlund teaches the sensor is adapted to measure the level (or volume) of water in the reservoir. The instant specification discloses any suitable device adapted to measure the volume of liquid inside the reservoir may be used. An example of a suitable sensor includes a level sensor such as an optical level detector (refractive index sensor or densitometer or spectrophotometer) (bottom of page 17). The instant specification discloses suitable sensors for measuring the volumetric level with a reservoir also include a viscometer and an electrical conductivity sensor (top of page 18). Thus, one of skill in the art would have been motivated to use the volumetric sensors of the claimed invention because Edlund teaches using sensors for measuring the volume of liquid inside the reservoir is known. Edlund teaches a volumetric sensor can be used for measuring the volume of liquid in the reservoir.

Art Unit: 1745

Regarding claims 21-24, Edlund does not explicitly teach the reservoir includes a partition to segregate the reservoir into at least two regions wherein at least one sensor is located in each region to detect the volume of liquid in the region.

However, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because the courts have ruled that providing duplicate parts for a multiplied effect is obvious. The two regions of the reservoir have the same function (i.e., mixing) and, thus, providing two reservoir regions to further mix the water and carbon-containing feedstock is considered obvious. In re Harza, 274 F.2d 669, 124 USPQ 378 (CCPA 1960). Although the reference does not disclose a plurality of mixing regions, the court has held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. MPEP 2144.04.

*

Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Edlund et al., US 6,375,906 in view of Hayes et al., US 4,666,457.

See discussion of Edlund above regarding claims 1-15, 25-31 and 33-66.

Regarding claim 32, Edlund does not explicitly teach the carbon-containing feedstock/water emulsion includes a surfactant.

However, Hayes teaches a surfactant may be used to reduce the viscosity of a hydrocarbon/water emulsion for purposes of transporting the emulsion through a pipeline or pumping the emulsion from a well (5:44-53).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have known that a

Art Unit: 1745


surfactant could have been added to the carbon-containing/water emulsion of Edlund in order to reduce the viscosity of the emulsion for the purpose of more easily transporting the emulsion to the reformer. It is known in the art that adding a surfactant to a hydrocarbon/water emulsion results in reduced viscosity so the emulsion can be transported through a pipeline or a pump.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Tracy Dove
Patent Examiner
Technology Center 1700
Art Unit 1745

June 4, 2004